REMARKS

Claims 1-13 have been canceled and replaced with new claims 14-26. New claims 14-26 clearly set forth method steps for forming the reflective sheet of the invention. Basis for these new claims can be found in the specification and original claims 1-13. No new matter has been added.

Arguments

Claims 1-13 were rejected under 35 USC 101 as the claims did not set forth any steps involved in the process of forming the reflecting material. Accordingly, claims 1-13 have been replaced with new claims 14-26 which clearly set forth the method steps required for forming a retro-reflecting shell having a curved or irregular surface with the capability of reflecting light in all directions. Accordingly, it is requested that the rejection of the claims under 35 USC 101 be withdrawn.

Original claim 10 was rejected under 35 USC 112, second paragraph as it was unclear what was meant by the phrase "screen printing lacquer". New claim 23 states that the lacquer is of a type which is capable for use in screen printing.

Original claims 12 and 13 were rejected under 35 USC 112, second paragraph as it was unclear what is considered to be "high gloss material". The applicant disagrees with this rejection as a "high gloss material" would include any type of material which has a high amount of surface shininess or luster. Claim 26 defines

this high gloss material as being formed from aluminum particles. It is respectfully requested that this rejection be withdrawn.

Originally filed 1-13 are rejected under 35 USC 102(b) and 35 USC 103(a) as being anticipated by Booras et al (3,877,786) and/or being obvious over the combination of Booras et al with several other references.

New claim 14 now requires that the pearls have a diameter between 0.01 and 0.05 mm. This limitation is not shown by Booras et al. Claim 14 also requires a method wherein the reflective material is subjected to vacuum forming to a shape corresponding to a curved or irregular surface and that the material has the capability of reflecting light in all directions. None of the references cited against the claims teach vacuum forming the reflective material to form an irregular shape and that the material has the capability of reflecting light in all directions. As discussed in the prior art section of the application, there is a need in the art for a reflecting material which may be vacuum formed to an irregular shape, such as a helmet, without cracking which causes the material to lose its reflecting properties. There is also a need in the art for a reflecting material which has the capability of reflecting light in all directions. For the above reasons, it is respectfully requested that the rejections of the claims under 35 USC 102(b) and 103(a) over Booras et al be withdrawn.

Now, turning to U.S. Patent No. 3,885,246 to Tung, cited on the attached Information Disclosure Statement. Specifically, Tung teaches a protective helmet which has a retro-reflective layer over the whole outer surface of a protective shell comprising a mono-layer of transparent glass microspheres partially embedded in binder and with a specular reflective coating on their embedded surface. A transparent sheet lies over and in tight frictional engagement with the layer but without optical contact to the microspheres exposed surfaces, and is attached to the shell around the layer to provide an airtight sealed pocket, so that the layer reflects under wet and dry conditions.

The surface to be coated with the composition in the Tung process is an irregular and curved surface as shown in Figure 1 therein. In order to transfer a composition of retro-reflecting particles around the periphery of the shell, a complicated method must be used, such as for example spray finishing, which has to be performed manually. This is especially true when a mono-layer is to be applied.

In the present application, a mixture of pearls in an adhesive transparent substance is transferred to a plain sheet. The sheet with its adjacent layer of pearls is then directly subjected to vacuum forming to a curved or irregular shape, corresponding to, for example, a helmet. As known within the art, vacuum forming is a plastic-sheet forming, in which the sheet is clamped to a

stationary frame and is first heated (>400°C) for more than ten seconds and is subsequently drawn down into a mold by vacuum, the substrate being heated to more than 110°C and then cooled down to 20°C. It is surprising that in the inventive method, a half-melted sheet with its reflecting layer of pearls can be stretched and formed to a desired shape with more than 800% stretching, which takes place in vacuum forming, without cracks in the reflecting layer, without disintegrating the reflecting layer form the adjacent sheet, and without loosening the reflecting properties.

In contrast to the method of Tung, the method of the present application allows for a rational production of retro-reflecting shells having a curved or irregular surface, which is less labor-intensive, less costly, and which results in products of higher quality. Further layers are also subsequently applied more easily. This is due to the present method, in which a flexible mixture of pearls is transferred to a plain sheet, which for example can be placed on a conveyor belt.

Conclusion

In view of the foregoing arguments and amendments, Applicant believes that the application meets all applicable statutory and regulatory requirements. Accordingly, Applicant respectfully requests allowance of all claims remaining in the application. If the Examiner has any questions regarding this amendment and/or believes that a telephone interview would assist in the advancement of this case to allowance, he/she is invited to contact the undersigned Agent for Applicant.

Respectfully submitted,

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